invention. Obvious modifications to the exemplary embodiments, as hereinabove set forth, could be readily made by those skilled in the art without departng from the spirit of the present invention. For example, the principles of the present invention are equally applicable to other variously constructed crop cutting assemblies. If desired, the cutting assembly may comprise a pair of large rotating discs rather than the illustrated series of cutters. It is also not necessary to drivingly connect the cutters to one another through a common gear case, The cutters may also be independently supported and driven.

The inventors hereby state their intent to rely on the Doctrine of Equivalents to determine and assess the reasonably fair scope of the present invention as pertains to any apparatus not materially departing from but outside the literal scope of the invention as set forth in the following claims.

What is claimed is:

1. A crop harvesting header configured for attachment to the mobile frame of a harvesting machine, said header comprising:

a crop cutting assembly comprising a series of rotary cutters that are rotatable about individual, upright axes and that cooperatively define a laterally extending cutting zone along which crop material is severed from the ground by the cutting assembly;

a pair of laterally extending crop conditioning rolls cooperatively defining a nip therebetween that is spaced upwardly and rearwardly from the cutting zone; and

a driveable crop conveying element having at least a portion thereof that moves upwardly and rearwardly between the cutting zone and the nip to convey crop cut by the cutting assembly toward the nip when the element is driven.

2. A crop harvesting header as claimed in claim 1;

header framework defining a laterally extending discharge opening spaced rearwardly from the cutting zone, with the opening being configured to receive cut crop from the series of cutters,

said cutting assembly projecting beyond the ends of the discharge opening to present a pair of outboard cutter sections; and

a pair of crop conveying assemblies, each disposed over a respective one of the outboard cutter sections for conveying crop cut by the respective one of the outboard cutter sections rearwardly and inwardly to the discharge opening.

3. A crop harvesting header as claimed in claim 2,

each of said crop conveying assemblies including a plurality of laterally spaced impeller cages rotatable about individual, upright axes,

each of said impeller cages presenting a front moveable boundary that is spaced forwardly of the adjacent inwardly spaced impeller cage.

4. A crop harvesting header as claimed in claim 3,

each outboard cutter section including a first cutter and an inwardly spaced second cutter,

said plurality of impeller cages including a first impeller cage mounted to the first cutter for rotational movement therewith, a second impeller cage mounted to the second cutter for rotational movement therewith, and an intermediate impeller cage suspended from the header framework between the first and second impeller cages.

5. A crop harvesting header as claimed in claim 1,

said crop cutting assembly and said conveying element defining a downwardly open area therebetween.

6. A crop harvesting header as claimed in claim 1,

said conveying element comprising a laterally extending, rotatable conveying roller having an outer periphery defining the upwardly and rearwardly moveable portion of the conveying element.

7. A crop harvesting header as claimed in claim 6,

said conveying roller and said cutting assembly presenting a downwardly open area therebetween.

8. A crop harvesting header as claimed in claim 6,

said conveying roller including at least one helical rib extending along the roller periphery and having opposite inclination on either side of the midpoint of the conveying roller.

9. A crop harvesting header as claimed in claim 6,

said conveying roller having a relatively smaller diameter than the conditioning rolls.

10. A crop harvesting header as claimed in claim 9,

said conditioning rolls being in a stacked relationship to present an upper conditioning roll and a lower conditioning roll,

said lower conditioning roll being rotatable about a lower conditioning roll axis,

said conveying roller being rotatable about a conveying roller axis that is lower than the lower conditioning roll axis.

11. A crop harvesting header as claimed in claim 10,

said cutting zone being substantially planar and generally vertically aligned with the conveying roller axis.

12. In a crop harvesting machine having a mobile frame, the improvement comprising:

a crop cutting assembly comprising a series of rotary cutters that are rotatable about individual, upright axes and that cooperatively define a laterally extending cutting zone along which crop material is severed from the ground by the cutting assembly;

a pair of laterally extending crop conditioning rolls cooperatively defining a nip therebetween that is spaced upwardly and rearwardly from the cutting zone; and

a driveable crop conveying element having at least a portion thereof that moves upwardly and rearwardly between the cutting Zone and the nip to convey crop cut by the cutting assembly toward the nip when the element is driven.

13. In a crop harvesting machine as claimed in claim 12,

framework defining a laterally extending discharge opening spaced rearwardly from the cutting zone, with the opening being configured to receive cut crop from the series of cutters,

said cutting assembly projecting beyond the ends of the discharge opening to present a pair of outboard cutter sections; and

a pair of crop conveying assemblies, each disposed over a respective one of the outboard cutter sections for conveying crop cut by the respective one of the outboard cutter sections rearwardly inwardly to the discharge opening.

14. In a crop harvesting machine as claimed in claim 13,

each of said crop conveying assemblies including a plurality of laterally spaced impeller cages rotatable about individual, upright axes,

each of said impeller cages presenting a front moveable boundary that is spaced forwardly of the adjacent inwardly spaced impeller cage.

15. In a crop harvesting machine as claimed in claim 14,

each outboard cutter section including a first cutter and an inwardly spaced second cutter,

said plurality of impeller cages including a first impeller cage mounted to the first cutter for rotational movement therewith, a second impeller cage mounted to the second cutter for rotational movement therewith, and an intermediate impeller cage suspended from the framework between the first and second impeller cages.

16. In a crop harvesting machine as claimed in claim 12,

said crop cutting assembly and said conveying element defining a downwardly open area therebetween.

17. In a crop harvesting machine as claimed in claim 12,

said conveying element comprising a laterally extending, rotatable conveying roller having an outer periphery defining the upwardly and rearwardly moveable portion of the conveying element.

18. In a crop harvesting machine as claimed in claim 17,

said conveying roller and said cutting assembly presenting a downwardly open area therebetween.

19. In a crop harvesting machine as claimed in claim 17,

said conveying roller including at least one helical rib extending along the roller periphery and having opposite inclination on either side of the midpoint of the conveying roller.

20. In a crop harvesting machine as claimed in claim 17,

said conveying roller having a relatively smaller diameter than the conditioning rolls.

21. In a crop harvesting machine as claimed in claim 20,

said conditioning rolls being in a stacked relationship to present an upper conditioning roll and a lower conditioning roll,

said lower conditioning roll being rotatable about a lower conditioning roll axis,

said conveying roller being rotatable about a conveying roller axis that is lower than the lower conditioning roll axis.

22. In a crop harvesting machine as claimed in claim 21,

said zone being substantially planar and generally vertically aligned with the conveying roller axis.

23. A crop harvesting machine comprising:

a mobile frame; and

a harvesting header supported on the frame for harvesting crop as the frame moves across a field, said header including

a cutter bed extending across the path of travel of the frame and including a series of rotary cutters rotatable about individual, upright axes,

header framework defining a laterally extending discharge opening spaced rearwardly from the cutter bed, with the opening being configured to receive cut crop from the series of cutters,

a pair of crop conditioning rolls spanning the discharge opening and defining a nip therebetween that is spaced upwardly and rearwardly from the cutter bed, and

a laterally extending crop conveying roller located between the cutter bed and the nip,

said conveying roller being rotatable in a direction to move crop from the cutter bed toward the nip.

24. A crop harvesting machine as claimed in claim 23,

said frame carrying a power source for propelling the frame across the field.

25. A crop harvesting machine as claimed in claim 23,

said series of rotary cutters including two sets of outboard cutters, with each of the sets being located adjacent an end of the cutter bed and substantially outboard of the discharge opening; and

a pair of crop conveying assemblies, each disposed over a respective one of the sets of outboard cutters for conveying crop cut by the respective one of the sets of outboard cutters rearwardly and inwardly to the discharge opening.

26. A crop harvesting machine as claimed in claim 25,

each of said crop conveying assemblies including a plurality of laterally spaced impeller cages rotatable about individual, upright axes,

each of said impeller cages presenting a front moveable boundary that is spaced forwardly of the adjacent inwardly spaced impeller cage.

27. A crop harvesting machine as claimed in claim 26,

each set of outboard cutters including a first cutter and an inwardly spaced second cutter,

said plurality of impeller cages including a first impeller cage mounted to the first cutter for rotational movement therewith, a second impeller cage mounted to the second cutter for rotational movement therewith, and an intermediate impeller cage suspended from the framework between the first and second impeller cages.

28. A crop harvesting machine as claimed in claim 23,

said cutter bed and said conveying roller defining a downwardly open area therebetween.

29. A crop harvesting machine as claimed in claim 23,

said conveying roller including at least one helical rib extending along the roller periphery and having opposite inclination on either side of the midpoint of the conveying roller.

30. A crop harvesting machine as claimed in claim 23,

said conveying roller having a relatively smaller diameter than the conditioning rolls.

31. A crop harvesting machine as claimed in claim 30,

said conditioning rolls being in a stacked relationship to present an upper conditioning roll and a lower conditioning roll,

said lower conditioning roll being rotatable about a lower conditioning roll axis,

said conveying roller being rotatable about a conveying roller axis that is lower than the lower conditioning roll axis.

32. A crop harvesting machine as claimed in claim 31,

said cutter bed defining a substantially planar cutting zone,

said conveying roller axis being generally vertically aligned with the cutting zone.

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